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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/828,414

04/20/2004

Toru Kuboi

17661

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23389

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08/16/2006

SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,414

Applicant(s)

KUBOI, TORU

Examiner

Lynne Edmondson

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 as amended, it is not clear whether the elastic member is a part of the bonding apparatus or a part of the structure to be bonded. As part of the structure to be bonded, the elastic member would not further limit the apparatus. For examination purposes, the elastic member is presumed to be a part of the semiconductor/substrate assembly. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (USPN 6616031 B2) in view of Simmons et al. (USPN 5368217).

Wong teaches a semiconductor bonding apparatus which mounts a chip via an elastic member (spring 1), comprising a holding section which holds the chip, a sliding bearing, a force sensing means and a driving section comprising a voice coil motor (figure 3, col 2 line 62 – col 3 line 27 and col 3 line 55 – col 4 line 37). However neither the bearing nor force sensor means are further disclosed. Neither are load cells or multiple force sensors employed.

Simmons teaches a semiconductor bonding apparatus comprising gas (air) bearings (col 9 lines 43-61), load cell force sensor and a camera (col 6 lines 29-49, col 7 lines 10-25 and col 8 lines 35-51).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a gas bearing and load cell as is conventional in the art to control movement of the tool relative to the workpiece without damaging the tool or the work. Multiple sensors which are an obvious variation of single sensors would facilitate control.

5. Claims 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong et al. (USPN 6616031 B2) in view of Simmons et al. (USPN 5368217) as applied to claims 1-3 and 5 above, and further in view of Kobayashi (USPN 5351872).

Wong teaches a semiconductor bonding apparatus which mounts a chip via an elastic member (spring 1), comprising a holding section which holds the chip, a sliding bearing, a force sensing means and a driving section comprising a voice coil motor (figure 3, col 2 line 62 – col 3 line 27 and col 3 line 55 – col 4 line 37). However neither

the bearing nor force sensor means are further disclosed. Neither are load cells or multiple force sensors employed.

Simmons teaches a semiconductor bonding apparatus comprising gas (air) bearings (col 9 lines 43-61), load cell force sensor and a camera (col 6 lines 29-49, col 7 lines 10-25 and col 8 lines 35-51).

However neither reference teaches a display.

Kobayahsi teaches a semiconductor bonding apparatus comprising a voice coil motor, sensors and a display (col 4 lines 26-59, col 5 lines 40-58 and col 7 line 60 – col 8 line 25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a display as part of the feedback and control system to quickly detect errors and facilitate corrections. Multiple sensors which are an obvious variation of single sensors would facilitate control.

Response to Arguments

6. In response to applicant's argument that Wong and Simmons teach a different method of bonding, particularly no elastic member disposed between the parts to be bonded, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is noted that the Wong apparatus comprises a spring as part of the apparatus. The members to be bonded do not further limit the apparatus. The bonding method is slightly different. The apparatus is capable of performing the bonding with means for monitoring, controlling and adjusting force as needed.

7. Therefore the 103 rejection of claims 1-3 and 5 as obvious over Wong in view of Simmons stands.

8. Therefore the 103 rejection of claims 4, 6 and 7 as obvious over Wong in view of Simmons and further in view of Kobayashi stands.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Laub et al. (USPN 3790738, air bearings, elastic member), Polansky et al. (USPN 4614292, air bearings, voice coil), Goransson (USPN 6585462 B1, gas bearing, tool), Janisiewicz et al. (USPN 4611397, air bearings, load cell), Kubo et al. (USPN 5317221, load cell, gas bearings), Morita et al. (USPN 5667129, load cell, gas bearings), and Phillips (USPN 4676649, movable stage, gas bearing).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571) 272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lynne Edmondson
Primary Examiner
Art Unit 1725



LRE